

**Catalog Description:** Phys 102. Basic Physics. 3-3-0. Prerequisite: Physics 101. A study of electromagnetism, electromagnetic waves, optics, modern physics, and astronomy; course designed for students not majoring in chemistry or physics. Credit toward graduation may be earned in this course or in PHYS 202 but not in both. Students enrolled in this course should schedule PHYS 104.

**Prerequisite:** PHYS 101

**Required Text:** “Essentials of Physics” by Serway & Vuille.

**Class Materials:** Documents discussed in class will periodically be placed on the Blackboard site for download. Exams from previous classes are on the professor’s website.

**Student Outcome Objectives:**

- PHYS 102, as a Core Curriculum course, fulfills three hours of general education requirements in the area of the natural sciences and is thus designed to enable students to meet the following broad outcomes for all the natural sciences:
  - Upon completion of the undergraduate curriculum, students will be able to comprehend and to apply the basic principles of science and methods of scientific inquiry.
  - Graduates will be able to comprehend and to use quantitative concepts and methods to interpret and to critically evaluate data and to effectively problem-solve in a variety of contexts demanding quantitative literacy.
  - Graduates will be able to comprehend and to apply the basic principles of science and methods of scientific inquiry.
  - For further explanation of the learning objectives associated with these goals, visit [http://www.nicholls.edu/gened/goals\\_objectives.html](http://www.nicholls.edu/gened/goals_objectives.html).
- The student will demonstrate a conceptual and mathematical understanding of electrostatics and electrodynamics.
- The student will show a working knowledge of electric circuits, their components, and how they are used.
- The student will understand the concepts and mathematics concerning the nature of light and be able to apply these in their study of optical instruments.

**Course Content:**

**Outline of Topics**

Chapters:        15-Electric Forces and Fields  
                     16-Electrical Energy and Capacitance  
                     17-Current and Resistance  
                     18-Direct-current Circuits  
                     19-Magnetism  
                     20-Induced voltages and Inductance  
                     22-Reflection and Refraction of Light  
                     23-Mirrors and Lenses  
                     24-Wave Optics  
                     25-Optical Instruments

**Testing:** All examinations will be closed book. Data and constants will be provided. The following are the exam dates:

Exam #1:    **Monday, 16 February 2009**

Exam #2:    **Wednesday, 25 March 2009**

Exam #3:    **Wednesday, 6 May 2009**

Final Exam: **Tuesday, 12 May 2009, 10:30 am**

**Homework:** I will assign the homework at the beginning of each segment. I will not collect the homework, but you will have periodic and announced quizzes whose problems will be taken directly from the homework.

**Quizzes:** For each segment prior to the hour-exams, you will take 1 quiz. These quizzes will be announced one class before the quiz date. The problems on each quiz will come directly from the homework assignment.

**Class Participation:** Each student receives 10 points for class participation. In case of any class disturbances, 3 points will be deducted from this credit.

**Grading:** There are a total of 540 points. Each hour exam counts 100 points, and the final exam is worth 200 points (500 points). Quiz grades combine to a total of 30 points. Class participation credit comprises 10 points. The grading scale is percentage-based with A (90-100%), B (80-89%), C (70-79%), D (60-69%), and F (0-59%) grades being assigned at the end of the semester.

For example, a student might receive these grades:

Hour exams: 85, 92, 73

Quiz grades: 10, 10, 4

Class participation: 7

Final Exam: 188

Extra Credit: 15

This student's final grade would be the total of these points divided by 540, or 88% (B).

**Extra Credit:** The student will have several opportunities for extra credit. The criteria for these credits are outlined in a separate document available on BlackBoard. A student can receive up to 20 extra credit points.